Remarks

This amendment responds to the Office action dated December 16, 2004. Applicants request that claims 1–11 be cancelled without prejudice, and request that new claims 12–44 be added to the application. The outstanding rejections of claims 6–8 are rendered moot by the present amendment. Applicants reserve the right to file continuing applications to prosecute the cancelled claims.

Applicants do not currently have a copy of the application as originally filed. Thus, the remarks presented herein make reference to the text of the present application as published (Publication No. US 2002/0132272, published September 19, 2002). The remarks also refer to the text of U.S. Patent No. 6,406,921, which issued to Wagner et al. from priority application serial number 09/115,455. Copies of the published application and issued patent are enclosed herewith for the Examiner's convenience. Applicants apologize for any inconvenience resulting from referencing the published application and issued patent.

Amendments to the Specification

The Office action required that applicants update the status of the parent applications relied upon for priority and cited in paragraph 1 of the application as originally filed. The status of these two prior (now issued) applications is properly updated by the foregoing amendments to the specification.

Applicants request that new paragraph [0067.1] be added to the specification. This paragraph is copied from the paragraph found at column 7, lines 6–10 of U.S. Patent No. 6,406,921 (the '921 patent), which was incorporated into the present application by reference in its entirety. *See*, paragraph 1 of the present application.

Applicants Request that an Interference be Declared

Applicants request that an interference be declared between the present application and issued U.S. patent number 6,573,369 to Henderson et al. (Henderson). A copy of Henderson is enclosed for the Examiner's convenience. The requirements of 37 C.F.R. §1.607 for this request for an interference are met below.

Applicants propose that new claims 12–44 as submitted in the foregoing amendment be used as counts for an interference between the present application and Henderson. New claims

12–39 were copied from Henderson and new claims 40–44, which correspond substantially to Henderson's claims, were filed to provoke an interference.

Pursuant to 37 C.F.R. 1.607(c) the new claims correspond to Henderson's claims as follows:

Claims 12–20 correspond exactly to Henderson's claims 1–9;
claims 21–23 correspond exactly to Henderson's claims 11–13;
claims 24–38 correspond exactly to Henderson's claims 15–29;
claim 39 corresponds exactly to Henderson's claim 32; and
claims 40–44 correspond substantially to Henderson's claim 1.

Both the present application and Henderson are directed to arrays of biomolecules useful for detecting and/or analyzing their interactions with various ligands. For example, applicants' technology provides arrays that are used for the parallel detection and analysis of large numbers of proteins in a sample. *See*, applicants' specification under the heading "Field of the Invention." Similarly, Henderson's disclosure is largely directed to the same goal. Indeed, as will become apparent from review of the claims and applicants' supporting disclosure presented herein corresponding to Henderson's claims, Henderson employs, in its claims and specification, much of the same terminology that is used in applicants' disclosure. However, applicants have an earlier effective filing date than Henderson, and thus are entitled to judgment relative to the proposed counts.

I. Application of Claim Terms to the Present Disclosure

As required by 37 C.F.R. 1.607(a)(5), the terms of the new claims are applied to applicants' specification below.

A. The Terms used Repeatedly in the Claims are Fully Supported by Applicants' Disclosure

As a preliminary matter, several terms that are used throughout the newly proposed claims clearly find support in applicants' specification.

For example, the term "molecular array" is recited in every newly proposed claim. Support for this term is found in throughout applicants' specification. For example, applicants

provide one definition for the term "array" in paragraph **50** of the present application as published (Publication No. US 2002/0132272). Moreover, in paragraph **12** applicants' specification describes "arrays of protein-capture agents." and paragraph **34** states, " 'protein-capture agent' means a molecule... ." Thus, "arrays of protein-capture agents" as used in applicants' specification provides support for the claim term "molecular array."

The term "deposition material" recited in the newly proposed claims is supported by applicants' term "protein-capture agent." Specifically, examples of "deposition materials" provided by Henderson include biomolecules, proteins and nucleic acids. *See*, Henderson at column 7, lines 29–34. Applicants' specification refers to the same materials described by Henderson as "deposition materials" as "protein-capture agents." *See*, applicants' specification at paragraph 34, which states that "the protein-capture agent will most typically be a biomolecule such as a protein or a polynucleotide." Additional examples of protein-capture agents corresponding to Henderson's "deposition materials" are given throughout applicants' specification. Thus, the claim term "deposition material" is supported by applicants' disclosure.

The term "deposition domain" recited in the newly presented claims is supported by the term "patch of protein capture agents" as taught by applicants. Indeed, these terms are equivalent, for example, the Henderson patent states that "[a] deposition domain is a spot on a surface upon which a deposition material is placed." Henderson, column 7, lines 35,36. Similarly, applicants' specification states in paragraph **34** that "[a] patch of protein-capture agents means a discrete region of immobilized protein-capture agents on the surface of a substrate." Thus, the claim term "deposition domain" is supported by applicants' disclosure.

The term "substrate" as taught in applicants' specification is used consistently in both applicants' specification and the newly presented claims. Applicants' disclosure lists numerous exemplary substrate materials in paragraph **88**.

B. The Remaining Terms of Newly Presented Claims 1–44 are Fully Supported by Applicants' Disclosure

Citations from applicants' disclosure that provide support for the claims presented herein are provided for each new claim in turn below. The citations provided are exemplary only and additional support is found for each claim in applicants' disclosure.

Claim 12 recites "at least one discrete molecular deposition domain on said substrate" in addition to the common terms discussed above. This feature is supported in applicants' specification in paragraph **13**, which states "a substrate...and a plurality of patches arranged in discrete known regions...each patch comprises protein-capture agents" (emphasis added).

Claim 12 also recites that "the spatial address of the domain is less than one micron squared in area." This feature is fully supported by applicants' disclosure. Specifically, new paragraph **67.1** states "the area of each patch may be from about 100 nm^2 to about 40,000 μm^2." *See*, foregoing amendments to the specification. Thus, 100 nm^2 is less than 1 micron squared, and thus supports the feature of the domain being less than one micron squared in area, as claimed in claim 12. Moreover, paragraph **67.1** goes on to state "[e]ach patch preferably has an area from about 1 μm^2 to about 10,000 μm^2" (Emphasis added). Thus, applicants clearly disclose features having an area less than one micron squared, and each term in claim 12 finds support in applicants' specification as detailed above.

Claim 13 depends from claim 12 and, in addition, states that "the molecular deposition domain is a line." This feature is supported in applicants' specification as published in paragraph number **51**, which states that "patches may be of any geometric shape or may be irregularly shaped." As discussed above, the term "deposition domain" recited in the newly presented claims is supported by the term "patch of protein capture agents" as taught by applicants' disclosure.

Claim 14 depends from claim 12 and states that "at least one molecular deposition domain is a spot." According to Henderson, "a deposition domain is a spot." See, Henderson at column 7, line 35. Henderson goes on to state "[t]hese molecular deposition domains may alternatively be referred to as 'spots' or 'points.' " This feature is supported in applicants' specification by use of the term patch in, for example, paragraphs **51** and **99**.

Claim 15 depends from claim 12 and states that the "deposition domain is an irregular shape." This feature is supported in applicants' disclosure at paragraph **51**, which states "the patch may be irregularly shaped."

Claim 16 depends from claim 12 and adds that the "deposition domain is a regular shape." This feature is supported in applicants' disclosure at paragraph **51**, which states that the patches may be of "any geometric shape."

Claim 17 depends from claim 12 and adds that the "deposition domain is deposited at a known location." This feature is supported in applicants' specification in paragraph **13**, which states "a substrate...and a plurality of patches arranged in discrete known regions...each patch comprises protein-capture agents" (emphasis added).

Claim 18 depends from claim 12 and adds that "the molecular deposition domains are affixed to the surface in a high density format." This feature is taught by applicants' disclosure in, for example, paragraph **171**, which describes high density antibody arrays.

Claim 19 depends from claim 12 and states "the substrate is modified by one or more of the group consisting of gold, an amino group, a carboxyl group, and polymers." Applicants disclose all of the modifications in, for example, paragraphs **88–90** of the specification.

Claim 20 depends from claim 12 and states "the substrate is chosen from the group consisting of hydrophobic materials and hydrophilic materials." Applicants disclose both hydrophobic substrates, such as polystyrene and hydrophilic substrates, such as polyacrylamide, in paragraph **88** of the specification.

Claim 21 depends from claim 12 and states "the biomolecule is a protein." Applicants' disclosure teaches proteins for immobilization on arrays throughout, for example, in paragraphs **83** and **84**.

Claim 22 depends from claim 12 and states "the biomolecule is an antibody." Applicants' disclosure teaches antibodies for immobilization on patches of an array in paragraphs **84** and **85**.

Claims 23–25 depend from claim 12 and state that the biomolecule is a nucleic acid, DNA molecule, or RNA molecule. Applicants' disclosure teaches these features in paragraph **82**.

Claim 26 is an independent claim that is similar to claim 12, and in addition to the features of claim 12 states "each domain includes a silane deposited on the substrate." Applicants' disclosure teaches this feature in paragraph **105**.

Claim 27 is an independent claim that is similar to claim 12, and in addition to the features of claim 12 recites "the deposition domain including a long chain biomolecular deposition material having the capacity to bind the target material." Numerous long chain biomolecular deposition materials are taught in the present application. For example, paragraphs **82–85** teach arrays of proteins and nucleic acids that bind to a material, such as a protein or peptide target.

Claim 27 also recites "a substrate including a substantially flat surface." Applicants' disclosure teaches this feature in paragraphs **87** and **92**.

Claim **28** depends from claim 27 and recites "the deposition material is a protein." Applicants' disclosure teaches proteins for immobilization on arrays throughout, for example, in paragraphs **83** and **84**.

Claim 29 depends from claim 27 and recites "the deposition material is an antibody." Applicants' disclosure teaches antibodies for immobilization on patches of an array in paragraphs **84** and **85**.

Claims 30 and 31 depend from claim 27 and recite that the deposition material is a nucleic acid and a DNA molecule, respectively. Applicants' disclosure teaches these features in paragraph **82**.

Claim 32 depends from claim 27 and recites "the surface is chosen from one or more of the group consisting of a hydrophobic surface and a hydrophilic surface." Applicants' disclosure teaches both hydrophobic surfaces and hydrophilic surfaces, in paragraphs **96** and **107** of the specification.

Claim 33 depends from claim 27 adds "the substantially flat surface comprise[s] a sputter deposited layer of gold thereon, the deposition domain deposited on the gold." Applicants' disclosure teaches this feature in paragraph **90**.

Claim 34 is an independent claim that is similar to claim 27. In addition, claim 34 recites "at least two domains containing different biologically or chemically based molecules." This feature is taught by applicants' disclosure in paragraph **75**.

Claim 35 depends from claim 34 and recites "the molecule is chosen from one or more of the group consisting of a protein, antibody, nucleic acid, and DNA." This feature is taught by applicants' disclosure in paragraphs **82–85**.

Claim 36 depends from claim 34 and recites "the surface is modified." Surface modification is taught throughout applicants' disclosure, specifically, for example, in paragraphs **88–90**.

Claim 37 is an independent claim, which is supported by applicants disclosure at paragraphs **13, 51** and **75**.

Claim 38 depends from claim 37 and adds "the substrate is chosen from one or more of the group consisting of mica, glass, silicon, and quartz." This feature is taught by applicants' disclosure in paragraph **88**.

Claim 39 depends from claim 12 and further recites "the array comprises more than one molecular deposition domain, and wherein the biomolecule is selected from the group consisting of a protein, an antibody, a nucleic acid, a succinimide, a DNA molecule, an RNA molecule, and combinations thereof." These features are taught by applicants' disclosure, for example, in paragraph **75**, which teaches plural deposition domains, and paragraphs **82–85**, which teach various biomolecules.

Claim 40 is an independent claim that corresponds substantially with Henderson's claim 1. Claim 40 finds support throughout applicants' disclosure and specifically in paragraphs **13** and **51**, and **67.1**.

Claims 41–44 correspond substantially to Henderson's claim 1. Claim 43 also corresponds substantially to Henderson's claim 12. Claims 41–44 are supported in applicants' disclosure in paragraphs **13, 82, 84** and **85**.

Applicants submit that the requirements of 37 C.F.R. 1.607(a)(5) have been fully met, by the demonstration of support for new claims 12–44 in applicants' disclosure.

II. Compliance with 35 U.S.C. § 135(b)

The present claims were filed within one year of the issuance of Henderson. Thus, the claims presented herein comply with 35 U.S.C. § 135(b). Therefore an explanation under 37 C.F.R. § 1.607(a)(6) is not required.

III. The Requirements of 37 C.F.R. § 1.608 Do Not Apply

Applicants' earliest effective filing date is July 14, 1998, which is well prior to Henderson's actual filing date of May 18, 2000, as well as the earliest date relied upon by Henderson, which is May 21, 1999. Because applicants are entitled to an earlier filing date than Henderson applicants are entitled to judgment relative to the patentee with respect to the proposed counts and the requirements of 37 C.F.R. § 1.608 do not apply.

Conclusion

The present claims are in condition for allowance. As such, applicants respectfully request that an interference be declared between the present application and U.S. Patent No. 6,573,369 to Henderson.

Respectfully submitted,

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